NEWS RELEASE

U.S. ARMY CORPS OF ENGINEERS

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William Farrow
256-895-1693
william.farrow@usace.army.mil

FUDS team hosts innovative field trial

OMAHA Neb.-- The U.S. Army Corps of Engineers Omaha District project delivery team for the Atlas Site 10 Formerly Used Defense Site is hosting an innovative technology demonstration for treatment of tainted soil surrounding a former Atlas F missile silo in Nebraska.

Historic operations at the former silo have resulted in contamination of soil and groundwater.

The soil surrounding the silo is known to contain trichloroethylene (TCE), a chlorinated hydrocarbon commonly used as an industrial solvent.

The contaminated area, a former Atlas F missile facility near York, Neb., was operated from 1960 to 1964 by an Air Force unit located at the former Lincoln Air Force Base.

The major structure at Site 10 is the 174 feet deep, 52 foot diameter underground missile silo which was deactivated in 1965.

The site was proposed for this Environmental Security Technology Certification Program-funded demonstration by the U.S. Army Engineering and Support Center, Huntsville, Environmental and Munitions Center of Expertise.

GSI Environmental Inc. conceived the new technology (called “H2T”), proposed the technology demonstration and is overseeing the demonstration project.

H2T involves the process of injecting a gas mixture primarily of nitrogen, hydrogen and propane into the soil for anaerobic, in-place bioremediation of TCE. Gas injection was initiated in June and will continue through January.

The injected propane and hydrogen serve as a food source for soil micro-organisms. The main purpose of the nitrogen is to displace oxygen, in order to try to drive conditions from aerobic to anaerobic in the pore space of the deep soils. If anaerobic conditions can be established and maintained, this should allow for growth of strains of naturally occurring, dechlorinating micro-organisms such as Dehalococcoides ethogenes, also known as DHC. DHC are capable of using TCE for respiration, while using hydrogen as their food source.

Prior to the initiation of the H2T demonstration, a soil vapor extraction (SVE) system had been installed at the site. The SVE system was operated from 2008 until March. The recovery rate of volatile organic compounds (VOC) using the SVE system had been in decline, and appeared to have nearly leveled off before the H2T demonstration was initiated.

GSI decided to treat a portion of the vadose zone, the soil between the ground surface and the water table located on the east side of the missile silo, which had exhibited some of the highest levels of VOCs in soil.

The VOCs appear to be hung up in the vadose zone and are also believed to be serving as a continuing source as they gradually leach downward into groundwater.

The zone slated for the demonstration also happens to be very low permeability soil — an extremely challenging situation for in-place treatment.

In contrast to some of the other in-place treatment technologies for VOCs that are hung-up in deep, low-permeability soils, the H2T process appears to be a passive and low-cost approach.

Other aggressive technologies such as *in situ* thermal treatment and deep soil mixing with a large diameter augur could be applied in this type of setting. However, both technologies are generally very expensive.

At the conclusion of the study, soil boring samples are collected and the soil gas monitoring data will be compiled. The data will then be analyzed to determine whether or not the process was effective for cleaning up the TCE.

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